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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,689	01/15/2004	Arvind Raman	1864.004US1	4967

7590 11/03/2006

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EXAMINER	
RAO, ANAND SHASHIKANT	
ART UNIT	PAPER NUMBER
2621	

DATE MAILED: 11/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/758,689	RAMAN ET AL.	
	Examiner	Art Unit	
	Andy S. Rao	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 26-28 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

A). The Examiner notes that "having instructions..." does not specify how the instructions are (a) associated with the medium, or (b) the nature of instructions. Data structures not claimed as embodied (or encoded with or embedded with) in a computer readable medium are descriptive material per se, and are not statutory, *Warmerdam, 33 F.3d at 1361, 31, USPQ2d at 1760).* Specifying the association in the manner listed above would sufficiently address the first condition. Similarly, computer programs claimed as computer listings, instructions, or codes are just the descriptions, expressions, of the program are not "physical things". They have neither computer components nor statutory processes, as they are not "acts" being performed. In contrast, a claimed "...computer readable medium encoded with a computer program..." is a computer element which defines structural and function interrelationships between the computer program and the rest of the computer, and is statutory, *Lowry, 32 F.3d at 1583-84, 32 USPQ2d*

at 1035. Specifying the instructions as a "computer program" would sufficiently address the second condition, *Interim Guidelines, Annex IV (Section a).*

B). Lastly, the computer program as claimed doesn't isn't properly associated with the operation. It is quite possible that the computer program may be an unrelated sub-routine or a simple commence instruction which then causes the computer to execute the operation that could be self-resident, and not encoded on the medium. The Examiner suggests that the computer program be more directly associated with the operation, *Interim Guidelines, Annex IV (Section b).*

Corrections to the claims, and supporting specification are required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002

do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claims 1-31 are rejected under 35 U.S.C. 102(e) as being anticipated by Katsavounidis et al., (hereinafter referred to as "Katsavounidis").

Katsavounidis discloses a method (Katsavounidis: figure 3) comprising: detecting a channel error by locating a damaged macroblock in multiple macroblocks of a video frame using header information (Katsavounidis: column 8, lines 15-20); and isolating the detected channel error to a few macroblocks around the located damaged macroblock to reduce data loss and improve video quality (Katsavounidis: column 8, lines 25-37), as in claim 1.

Regarding claim 2, Katsavounidis discloses wherein isolating the detected channel error comprises: estimating the damaged macroblock by using undamaged macroblocks substantially surrounding a boundary of the damaged macroblock in the video frame (Katsavounidis: column 8, lines 40-50); and replacing the damaged macroblock with the estimated damaged macroblock to conceal the error in the damaged macroblock (Katsavounidis: column 8, lines 50-60), as in the claim.

Regarding claim 3, Katsavounidis discloses receiving a coded video signal (Katsavoundis: column 8, lines 15-25); and parsing the coded video signal to obtain a sequence of video frames (Katsavoundis: column 6, lines 45-65); and parsing each video frame to obtain the header information, video packet information, and macroblock data, wherein the macroblock data includes multiple macroblocks (Katsavounidis: column 7, lines 20-35), as in the claim

Regarding claim 4, Katsavoundis discloses wherein estimating the damaged macroblock using the undamaged macroblocks substantially surrounding the boundary of the damaged macroblock comprises: estimating the damaged macroblock by using a weighted linear interpolation of the undamaged macroblocks surrounding the damaged macroblock (Katsavounidis: column 8,lines 40-50), as in the claim.

Regarding claim 5, Katsavoundis discloses wherein estimating the damaged macroblock using the undamaged macroblocks comprises: computing a pixel value for each pixel in the damaged macroblock as a function of associated pixels in the undamaged macroblocks substantially surrounding the boundary of the damaged macroblock (Katsavounidis: column 9, lines 1-21), as in the claim.

Katsavoundis discloses a method (Katsavounidis: figure 3) comprising: detecting an error by locating a damaged macroblock in multiple macroblocks in a video frame using header information, global information, and/or video packet information in the video frame (Katsavounidis: column 8, lines 10-20); estimating a pixel value for each pixel in the damaged macroblock by computing a weighted sum of the associated pixel values in each of the undamaged macroblocks surrounding the damaged macroblock (Katsavounidis:c olumn 9, lines 1-22); and copying the estimated damaged macroblock to conceal the error in the damaged macroblock (Katsavounidis:c olumn 8, lines 40-50), as in claim 6.

Regarding claim 7, Katsavounidis discloses wherein, in estimating, the undamaged macroblocks surrounding the damaged macroblock comprises about 1- 4 undamaged macroblocks (Katsavounidis: column 8, lines 50-60), as in the claim.

Regarding claim 8, Katsavounidis discloses that the computed weight of each associated pixel is inversely proportional to the distance between a pixel being estimated and a pixel being used for estimation (Katsavounidis: column 9, lines 1-21), as in the claim.

Regarding claim 9, Katsavounidis discloses wherein estimating the pixel value of each pixel in the damaged macroblock by computing a weighted sum of the associated pixels in each of the undamaged macroblocks surrounding the damaged macroblock comprises: checking each of the macroblocks surrounding the damaged macroblock for an error in the current video frame; if there is an error, then choosing undamaged macroblocks based on the detected error and computing a weighted sum of absolute differences between pixel values in the chosen undamaged macroblocks surrounding the damaged macroblock in the current frame and associated pixel values in associated macroblocks in a previous video frame (Katsavounidis: column 8, lines 50-67); if there is no error, then choosing all macroblocks surrounding the damaged macroblock as the undamaged macroblocks and computing a weighted sum of absolute differences between pixel values in the chosen macroblocks surrounding the damaged macroblock and associated macroblocks in the previous video frame (Katsavounidis: column 9, lines 1-5); determining a number of chosen undamaged macroblocks used in computing the weighted sum of absolute differences (Katsavounidis: column 10, lines 39-54); computing a sum value by dividing the computed weighted sum of the absolute differences by the number of chosen undamaged macroblocks (Katsavounidis: column 14, lines 50-67); comparing the computed sum value with a threshold value (Katsavounidis: column 15, liens 1-26); if the computed sum value is less than or equal to the threshold value, then using a spatial interpolation to estimate the damaged macroblock to conceal the error (Katsavounidis: column 15, lines 26-

67); and if the computed sum value is greater than the threshold value, then copying an associated undamaged macroblock in a previous video frame to conceal the error (Katsavounidis: column 16, lines 1-26), as in the clam.

Regarding claim 10, Katsavoundis discloses wherein the header information includes information selected from the group consisting of a frame start code, header information, and a stuffing bit pattern (Katsavounidis: column 23, lines 3-65).

Regarding claim 11, Katsavounidis discloses wherein the video packet information includes information selected from the group consisting of resync marker data, a macroblock number, and motion and header information (Katsavounidis: column 24, lines 45-62), as in the claim.

Katsavounidis discloses a method (Katsavounidis: figure 3) comprising: detecting a channel error by locating a damaged macroblock in multiple macroblocks in a current video frame using header information, global information, and/or video packet information in the video frame (Katsavounidis: column 8, lines 10-20); reconstructing the damaged macroblock by estimating a motion vector of the damaged macroblock using motion vectors of undamaged macroblocks surrounding the damaged macroblock (Katsavounidis: column 10, lines 30-65); and copying the reconstructed damaged macroblock to conceal the error in the damaged macroblock (Katsavounidis: column 8, lines 50-60), as in claim 12.

Regarding claim 13, Katsavounidis discloses wherein using the motion vectors of the undamaged macroblocks surrounding the damaged macroblock comprises: using the motion vectors of undamaged macroblocks located in two rows that are substantially adjacent to the damaged macroblock (Katsavounidis: column 10, lines 50-60), as in the claim.

Regarding claims 14-16, Katsavounidis discloses wherein reconstruction of the damaged macroblock by estimating the motion vector of damaged macroblock using motion vectors of the undamaged macroblocks surrounding the damaged macroblock comprises: estimating the motion vector of the damaged macroblock in the current video frame (Katsavounidis: column 10, lines 1-15); estimating a motion vector of a macroblock located substantially adjacent and above the damaged macroblock (Katsavounidis: column 10, lines 30-40); estimating a motion vector of a macroblock located substantially below the damaged macroblock (Katsavounidis: column 10, lines 45-55); estimating a motion vector of a macroblock located substantially adjacent, above, and left of the damaged macroblock (Katsavounidis: column 10, liness 20-25); checking for error in the macroblock located substantially below the damaged macroblock (Katsavounidis: column 10, lines 55-65); and if there is an error in the macroblock located substantially below the damaged macroblock, then estimating the motion vector of the damaged macroblock as the motion vector of the macroblock located substantially adjacent and above the damaged macroblock (Katsavounidis: column 9, lines 40-50), as in the claims.

Katsavounidis discloses an apparatus (Katsavounidis: figure 1) comprising: a header decoding module parses a video frame to get header information and multiple macroblocks (Katsavoundis: column 7, lines 5-15)); an error recovery module detects a channel error by locating a damaged macroblock in the multiple macroblocks using the header information (Katsavounidis: column 8, lines 15-20); and a spatial data error concealment module estimates the damaged macroblock by using undamaged macroblocks substantially surrounding a boundary of the damaged macroblock and replaces the damaged macroblock with the estimated

damaged macroblock to conceal the channel error in the damaged macroblock (Katsavounidis: column 8,lines 40-60), as in claim 17.

Regarding claim 18, Katsavounidis discloses a bit stream demux module receives a coded video signal and obtains a sequence of video frames (Katsavounidis: column 6, lines 45-65), as in the claim.

Regarding claim 19, Katsavounidis discloses the spatial data error concealment module estimates the damaged macroblock by using a weighted linear interpolation of the undamaged macroblocks surrounding the damaged macroblock. (Katsavounidis: column 8, lines 45-55), as in the claim.

Regarding claim 20, Katsavounidis discloses wherein the spatial data error concealment module estimates the damaged macroblock by computing a pixel value for each pixel in the damaged macroblock as a function of associated pixels in the undamaged macroblocks surrounding the damaged macroblock (Katsavounidis: column 8, lines 35-50), as in the claim.

Regarding claim 21, Katsavounidis discloses a video decoder (Katsavounidis: figure 1) comprising: a header decoding module parses a video frame to get header information and multiple macroblocks (Katsavoundis: column 7, lines 5-15)); an error recovery module detects a channel error by locating a damaged macroblock in the multiple macroblocks using the header information (Katsavounidis: column 8, lines 15-20); and a spatial data error concealment module estimates the damaged macroblock by using undamaged macroblocks substantially surrounding a boundary of the damaged macroblock and replaces the damaged macroblock with the estimated damaged macroblock to conceal the channel error in the damaged macroblock (Katsavounidis: column 8,lines 40-60), as in claim 21.

Regarding claim 22, Katsavounidis discloses wherein the undamaged macroblocks surrounding the damaged macroblock comprises about 1-4 undamaged macroblocks substantially surrounding the damaged macroblock (Katsavounidis: column 8, lines 40-60), as in the claim.

Regarding claim 23, Katsavounidis discloses wherein the computed weight of each associated pixel is inversely proportional to the distance between an estimated pixel and a pixel being used for estimation (Katsavounidis: column 9, lines 1-22), as in the claim.

Katsavounidis discloses an apparatus for decoding a coded video signal (Katsavounidis: figure 1) comprising: a header decoding module parses a video frame to get header information and multiple macroblocks (Katsavoundis: column 24, lines 45-55); an error recovery module detects a channel error by locating a damaged macroblock in the multiple macroblocks using the header information, global information, and/or video packet information in the video frame (Katsavounidis: column 8, lines 15-20); a spatial data error concealment module obtains motion vectors of undamaged macroblocks surrounding the damaged macroblock (Katsavounidis: column 8, lines 40-50), wherein the spatial error concealment module estimates a motion vector of the damaged macroblock using the motion vectors of undamaged macroblocks (Katsavounidis: column 10, lines 45-55), wherein the spatial data error concealment module reconstructs the damaged macroblock using the estimated damaged macroblock (Katsavounidis: column 9, liens 35-45); and copying the reconstructed damaged macroblock to conceal the error in the damaged macroblock (Katsavounidis: column 8, lines 40-55), as in claim 24.

Regarding claim 25, Katsavounidis discloses wherein the spatial data error concealment module estimates the motion vector of the damaged macroblock using the motion vectors of the

undamaged macroblocks located in about two rows that are substantially adjacent to the damaged macroblock (Katsavounidis: column 10, lines 50-65).

Katsavounidis discloses an article (Katsavounidis: column 6, lines 15-25) comprising: a storage medium having instructions that, when executed by a computing platform, result in execution of a method (Katsavounidis: figure 3) comprising: detecting a channel error by locating a damaged macroblock in multiple macroblocks of a video frame using header information (Katsavounidis: column 8, lines 15-21); estimating the damaged macroblock by using undamaged macroblocks surrounding the damaged macroblock in the video frame (Katsavounidis: column 8, lines 40-50); and replacing the damaged macroblock with the estimated damaged macroblock to conceal the error in the damaged macroblock (Katsavounidis: column 9, lines 1-22), as in claim 26.

Regarding claim 27, Katsavounidis wherein estimating the damaged macroblock using the undamaged macroblocks surrounding the damaged macroblock comprises: estimating the damaged macroblock by using a weighted linear interpolation of the undamaged macroblocks surrounding the damaged macroblock (Katsavounidis: column 8, lines 49-55), as in the claim.

Regarding claim 28, Katsavounidis discloses wherein estimating the damaged macroblock using the undamaged macroblocks comprises: computing a pixel value for each pixel in the damaged macroblock as a function of associated pixels in the undamaged macroblocks surrounding the damaged macroblock (Katsavounidis: column 9, lines 1-22), as in the claim.

Katsavoundis discloses a system (Katsavounidis: figure 1) comprising: a bus Katsavounidis: column 6, liens 35-41); a processor coupled to the bus (Katsavounidis: column 5,

liens 50-55); a memory coupled to the processor (Katsavounidis: column 6, lines 15-20); a network interface coupled to the processor and the memory (Katsavoundis: column 6, lines 25-30); and a video decoder coupled to the network interface (Katsavounidis: column 6, lines 15-20) comprising: a header decoding module parses a video frame to get header information and multiple macroblocks (Katsavoundis: column 7, lines 5-15)); an error recovery module detects a channel error by locating a damaged macroblock in the multiple macroblocks using the header information (Katsavounidis: column 8, lines 15-20); and a spatial data error concealment module estimates the damaged macroblock by using undamaged macroblocks substantially surrounding a boundary of the damaged macroblock and replaces the damaged macroblock with the estimated damaged macroblock to conceal the channel error in the damaged macroblock (Katsavounidis: column 8,lines 40-60), as in claim 29.

Regarding claim 30, Katsavounidis discloses a bit stream demux module coupled to the header decoding module receives a coded video signal and obtains a sequence of video frames (Katsavounidis: column 8, lines 15-20), as in the claim.

Regarding claim 31, Katsavounidis discloses wherein the spatial data error concealment module estimates the damaged macroblock by using a weighted linear interpolation of the undamaged macroblocks surrounding the damaged macroblock (Katsavounidis: column 8, lines 40-60), as in the claim.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hoogenboom discloses a syntax parser.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andy S. Rao whose telephone number is (571)-272-7337. The examiner can normally be reached on Monday-Friday 8 hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on (571)-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Andy S. Rao
Primary Examiner
Art Unit 2621

asr
October 31, 2006

ANDY RAO
PRIMARY EXAMINER

Notice of References Cited	Application/Control No. 10/758,689	Applicant(s)/Patent Under Reexamination RAMAN ET AL.	
	Examiner Andy S. Rao	Art Unit 2621	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,876,705	04-2005	Katsavounidis et al.	375/240.28
*	B	US-5,566,089	10-1996	Hoogenboom, Chris	358/1.15
	C	US-			
	D	US-			
	E	US-			
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FOREIGN PATENT DOCUMENTS

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NON-PATENT DOCUMENTS

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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

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